Environmental radioactivity in Greenland in 1974

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Environmental Radioactivity in Greenland in 1974

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Abstract

Measurements of fall-out radioactivity in Greenland in 1974 are reported. Strontium-90 (and Caesium-137 in most cases) was determined in samples of precipitation, sea water, vegetation, animals, and drinking water. Estimates are given of the mean contents of ^{90}Sr and ^{137}Cs in the human diet in Greenland in 1974. Three Greenlanders were measured by wholebody counting.

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ABBREVIATIONS AND UNITS

FP	fission products
pCi	picocurie, 10^{-12} Ci, μμCi
nCi	nanocurie, 10^{-9} Ci, mμCi
mCi	millicurie, 10^{-3} Ci
S.U.	pCi ^{90}Sr/g Ca
M.U.	pCi ^{137}Cs/g K
nSr	natural (stable) Sr
S.D.	standard deviation, $\sqrt{\frac{\Sigma(\bar{x}-x_i)^2}{(n-1)}}$
S.E.	standard error, $\sqrt{\frac{\Sigma(\bar{x}-x_i)^2}{n(n-1)}}$
S.S.D.	sum of squares of deviation, $\Sigma(\bar{x}-x_i)^2$
f	degrees of freedom
s^2	the variance
v^2	the ratio between the variance in question and the residual variance
P	the probability fractile of the distribution in question
$\bar{x}$	mean value
η	coefficient of variation, relative S.D.
Σ	sum
anova	analysis of variance
A:	η = 20-33%
B:	η > 33%

1. INTRODUCTION

1.1.

In 1974 the sampling programme was similar to that used in previous years but for a few minor modifications.

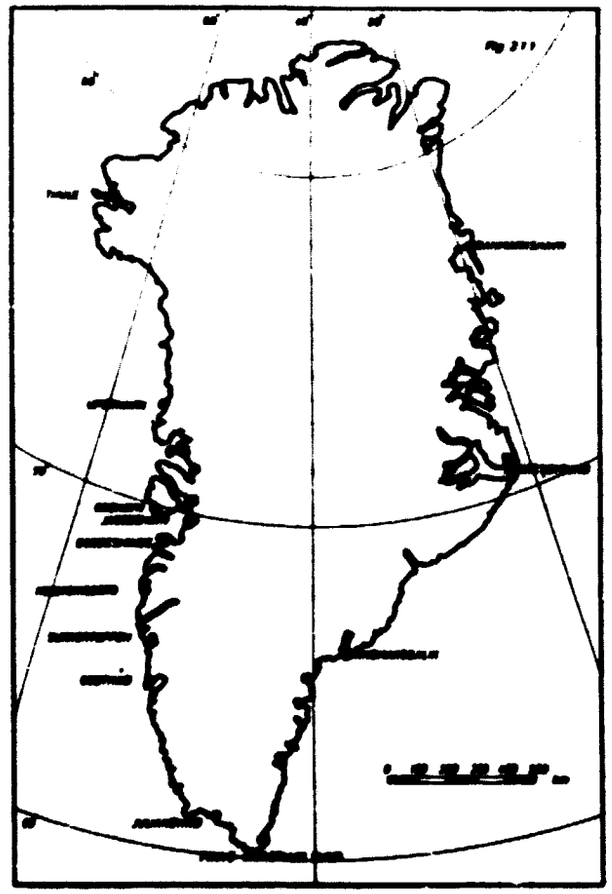

Fig. 1. Greenland.

1.2.

As hitherto, samples were collected through the local district physicians and the heads of the telestations. However, as it was impossible to obtain all samples specified in the programme, a number of samples were obtained from the Royal Greenland Trade Company. Sea water samples were collected by the DANA and the AGLANTHA.

1.3.

The estimated mean diet in Greenland was the same as that in 1962, i.e., it agreed with the estimate given by Professor E. Hoff-Jørgensen, Ph.D.

1.4.

The environmental studies in Greenland were carried out together with corresponding investigations in Denmark (cf. Risø Report No. 323)[2] and in the Faroes (cf. Risø Report No. 324)[3].

1.5.

The present report does not repeat information concerning sample collection and analysis already given in ref. 1.

2. RESULTS AND DISCUSSION

2.1. Strontium-90 in Precipitation

Table 2.1.1 shows the results of the measurements.

The total fall-out levels in 1974 at Upernavik and Godthåb were 3.7 times the 1973 figures. In Denmark[2] and the Faroes[3] the fall-out levels increased similarly from 1973 to 1974.

Table 2.1.1

Strontium-90 in precipitation collected in Greenland in 1974

Location	Unit	Jan.-Mar.	Apr.-June	July-Sep.	Oct.-Dec.	1974
Upernavik	pCi/l	5.0 A	3.16	2.64	0.60 A	$\bar{x}$ 1.84
Σ 193 mm	mCi/km^2	0.015 A	0.120	0.166	0.054 A	Σ 0.355
Godhavn	pCi/l	(1.25)**	2.94	2.11	0.97	$\bar{x}$(1.82)
Σ 434* mm	mCi/km^2	(0.023)	0.370	0.274	0.126	Σ(0.79)
Godthåb	pCi/l	0.50	3.41	0.77 A	0.43 A	$\bar{x}$ 1.18
Σ 432 mm	mCi/km^2	0.031	0.307	0.116 A	0.055 A	Σ 0.509
Prins Chr.Sund	pCi/l	0.51	1.37	0.78	(0.21)**	$\bar{x}$(0.58)
Σ 2153* mm	mCi/km^2	0.266	0.499	0.287	(0.189)	Σ(1.24)

* The missing amounts of precipitation were kindly supplied by Mr. Gunnar Nielsen, Danish Meteorological Institute

**Estimated from VAR 3[2].

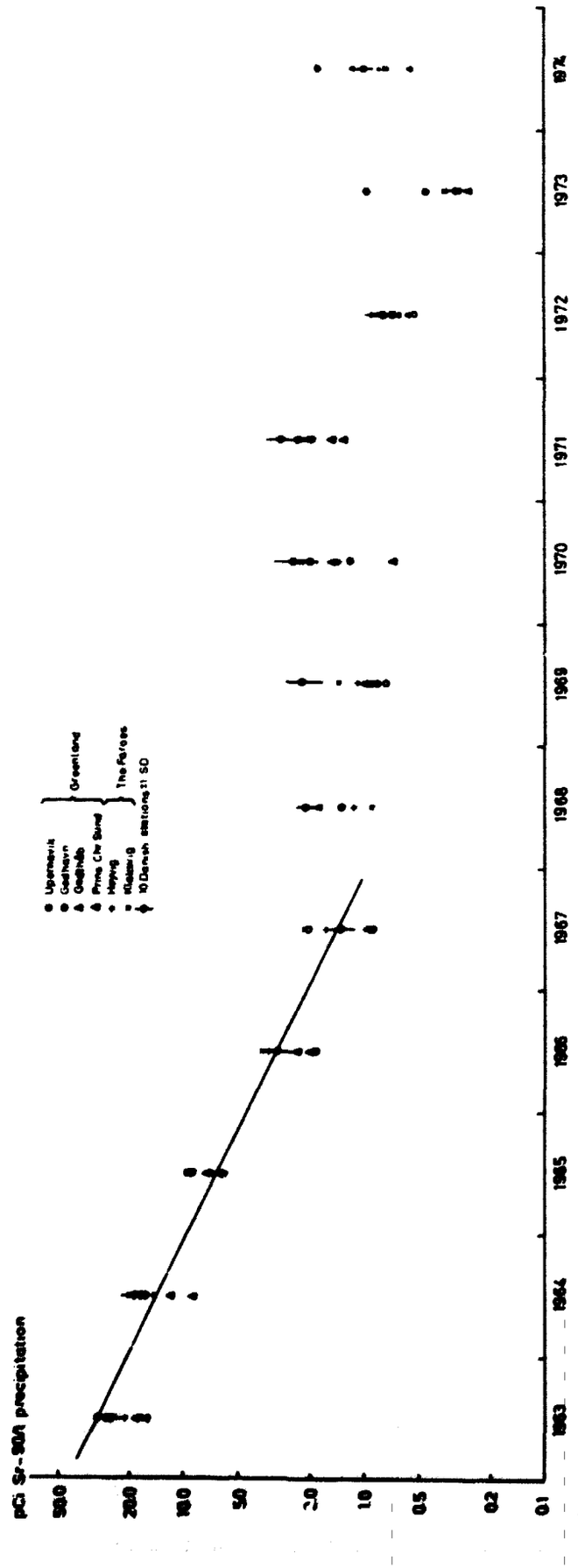

Fig. 2.1.2. Annual specific mean activity of ^{90}Sr in precipitation collected in Denmark, the Faroes, and Greenland in 1963-1974. The regression curve $y = 44.7\ e^{-0.76t}$ was calculated from the ten Danish stations in 1963-1967 (t = 0, Jan. 1, 1963), $y = 4.3\ e^{-1.08t}$ in 1971-1973 (t = 0, Jan. 1, 1971).

Table 2.1.2

Analysis of variance of ln pCi ^{90}Sr/l precipitation in Greenland 1974 (from table 2.1.1)

Variation	SSD	f	s^2	v^2	F
Betw. quarters	4.521	3	1.507	5.32	>95%
Betw. locations	4.066	3	1.355	4.79	>95%
Remainder	1.982	7	0.283	-	-

2.2. Strontium-90 in Sea Water

No samples were obtained in 1974 from current sampling (cf. ref. 1) along the Greenland coasts. However, the DANA provided surface samples collected in July-August 1974 in West Greenland waters and in the North Atlantic.

Table 2.2.1 shows the results of the ^{90}Sr and ^{137}Cs determinations. The ^{90}Sr levels are comparable with those of the previous years. It is remarkable that the ^{137}Cs/^{90}Sr mean ratio was as high as 2.44 in these samples.

Table 2.2.2 shows the levels in a few samples collected by the AGLANTHA at Thule in August 1974. In these the ^{137}Cs/^{90}Sr ratio was as low as 1.13, but the analytical error of the ^{137}Cs determinations was large for all these samples. It is thus not possible to draw any certain conclusions.

Table 2.2.1

Strontium-90 and Caesium-137 in surface sea water collected by the DANA in July and August in 1974

Position	pCi ^{90}Sr/l	pCi ^{137}Cs/l	Salinity o/oo
62°41'N 61°11'W	0.16	0.28	30.4
67°04'N 57°26'W	0.12	0.32	30.0
64°14'N 56°06'W	0.15	0.40	30.8
59°19'N 43°45'W	0.13	0.27 A	34.6
60°24'N 31°21'W	0.09	0.23	35.8
60°41'N 26°00'W	-	0.11±0.02 B*	32.4
61°02'N 20°50'W	0.09	0.24 A	36.0
61°26'N 15°34'W	-	0.11 B	33.2
61°51'N 10°22'W	-	0.20 A	34.0
61°20'N 04°50'W	0.09	0.24	35.8

*Double determinations

Table 2.2.2

Strontium-90 and Caesium-137 in sea water collected at Thule in August 1974

Position	Depth in m	pCi ^{90}Sr/l	pCi ^{137}Cs/l	Salinity o/oo
76°30'N 69°25'W	0	0.13	0.15 B	31.4
76°30'N 69°25'W	199	0.10	0.14 B	34.0
76°31'3"N 69°17'W	0	0.13	0.14 B	25.2
76°31'3"N 69°17'W	194	0.12	-	34.0
76°35'N 69°05'W	Bottom	0.11	0.10 B	33.9

The ^{90}Sr levels in the Thule sea water were close to the levels observed in 1968 (Risø Report No. 203[1]) and in 1970 (Risø Report No. 247[1]).

If we relate pCi ^{90}Sr/l to salinity, the data in tables 2.2.1 and 2.2.2 give the equation:

$$\text{pCi } ^{90}\text{Sr/l} = 0.404 - 0.0086 \text{ o/oo}$$

(the sample in table 2.2.2 with the low salinity of 25.2 o/oo was omitted). In 1964 (cf. Risø Report No. 109[1]) a sampling in the same area of the North Atlantic and in West Greenland waters gave:

$$\text{pCi } ^{90}\text{Sr/l} = 3.389 - 0.0905 \text{ o/oo} .$$

If we use these two evaluations we may calculate the ratio between the ^{90}Sr levels in sea water in 1964 and 1974.

In sea water with a salinity of 35 o/oo, i.e. equal to North Atlantic sea water, the ^{90}Sr level has decreased by a factor of approx. two since 1964, and in Greenland sea water with a salinity of 30 o/oo the levels in 1974 were approx. one fourth of the levels found ten years ago.

2.3. Strontium-90 and Caesium-137 in Terrestrial Animals

Reindeer samples were obtained from Egedesminde and Sukkertoppen. Table 2.3.1 shows the results.

The mean levels in reindeer meat were 1.7 nCi ^{137}Cs/kg and 11 pCi ^{90}Sr/kg. In bone we found 44 pCi ^{90}Sr/g Ca. Fig. 2.3.1 shows the annual ^{90}Sr levels in reindeer (and musk ox bone) since 1961. The reindeer levels have decreased exponentially

Table 2.3.1

Strontium-90 and Caesium-137 in reindeer in Greenland in 1974

Location	Species	Sample type	pCi ^{90}Sr/kg	pCi ^{90}Sr/g Ca	pCi ^{137}Cs/kg	pCi ^{137}Cs/g K
Egedesminde	Reindeer	Meat	12.2	118	566	152
Egedesminde	Reindeer	Bone	-	44	-	-
Sukkertoppen	Wild reindeer	Meat	9.9	244	2821	842
Sukkertoppen	Wild reindeer	Bone	-		-	-

since 1967 with an effective half-life of 1.5-2 years. Figure 2.3.2 shows the ^{137}Cs levels in Greenland reindeer meat since 1961. Although the variance is large, it is evident that the levels have decreased since 1967.

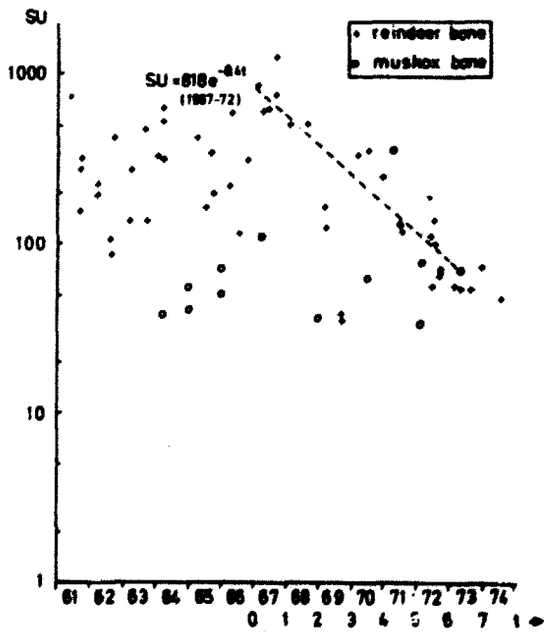

Fig. 2.3.1. Strontium-90 in reindeer and musk ox bone 1961-74. The two results from the autumn of 1969 were omitted in the calculation of the regression line: S.U. = 818 $e^{-0.4t}$ (1967-72).

Three samples of lamb were obtained through the Royal Greenland Trade Company. The meat contained 8.7 pCi ^{90}Sr/kg (247 S.U.) and 1080 pCi ^{137}Cs/kg (414 pCi ^{137}Cs/g K). The bone contained 58 pCi ^{90}Sr/g Ca. The levels for lamb were generally higher than those in 1973 as well as in 1972 and 1971[1].

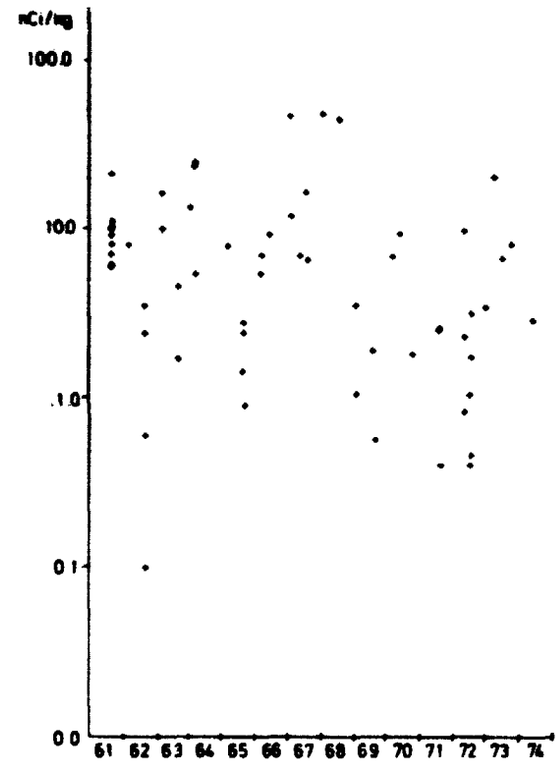

Fig. 2.3.2. Caesium-137 in reindeer meat from Greenland, 1961-74.

Table 2.3.2

Strontium-90 and Caesium-137 in lamb collected by the Royal Greenland Trade Company in 1974

Lamb	Sample type	pCi ^{90}Sr/kg	pCi ^{90}Sr/g Ca	pCi ^{137}Cs/kg	pCi ^{137}Cs/g K
I	Meat	7.5	401	1732	668
I	Bone	-	87	-	-
II	Meat	10.7	254	1210	419
II	Bone	-	55	-	-
III*	Meat	8.0	87	298	154
III	Bone	-	33	-	-

*Collected in Julianehåb

2.4. Strontium-90 and Caesium-137 in Sea Animals

The levels in fish, whale, seal and shrimps are shown in table 2.4.1. The mean levels in fish were: 0.6 pCi ^{90}Sr/kg meat, 60 pCi ^{137}Cs/kg meat and 1.83 S.U. in bone. The mean levels of the whale and seal samples were: 1.4 pCi ^{90}Sr/kg meat and 17 pCi ^{137}Cs/kg meat.

Table 2.4.1

Strontium-90 and Caesium-137 in sea animals purchased through the Royal Greenland Trade Company in 1974

Species	Sample type	pCi ^{90}Sr/kg	pCi ^{90}Sr/g Ca	pCi ^{137}Cs/kg	pCi ^{137}Cs/g K
Greenland Halibut*	Meat	0.87 B	4.2 B	16	5.1
Greenland Halibut	Meat	0.96	1.3	178	24
Greenland Halibut	Bone	-	1.5 A	-	-
Cod**	Meat	0.44 A	0.63 A	27	7.3
Cod	Bone	-	2.1	-	-
Salmon	Meat	0.25	0.89	18	4.4
Salmon	Bone	-	1.9	-	-
Whale I	Meat	0.52 A	14 A	19	7.4
Whale II	Meat	2.3 A	65 A	30	10
Seal	Blubber	-	-	3.1	44
Shrimp	Total	8.8	150	8.9	7.1

* Obtained from IRMA supermarket in Copenhagen

** Collected at Julianehåb

2.5. Strontium-90 and Caesium-137 in Vegetation

Lichen, moss, berries, and seaweed were collected along the Greenland coast during the summer. Table 2.5 shows the results.

The geometric mean levels in moss and lichen were 5320 pCi ^{90}Sr/kg and 23,000 pCi ^{137}Cs/kg. These levels are in good agreement with the values observed earlier (cf. fig. 2.5).

The ^{137}Cs levels generally decay more slowly than the ^{90}Sr levels in lichen (as well as in grass). For the period 1964-73 we estimated the effective half-life of ^{137}Cs in lichen from Greenland at 12 years.

Table 2.5

Strontium-90 and Caesium-137 in vegetation samples collected in 1974

Location	Species	pCi ^{90}Sr/kg	pCi ^{90}Sr/g Ca	pCi ^{137}Cs/kg	pCi ^{137}Cs/g K
Sukkertoppen	Lichen	7,022	4,049	25,162	17,695
Prins Chr.Sund	Lichen	1,666	2,282	-	-
Sukkertoppen	Moss	11,743	4,824	19,429	10,776
Prins Chr.Sund	Moss	5,845	3,848	24,938	4,598
Sukkertoppen	Crowberry	11,936	-	1,679	-
Sukkertoppen	Blackberries	457	-	1,481	-
Prins Chr.Sund	Seaweed	42	3.0	77	2.8

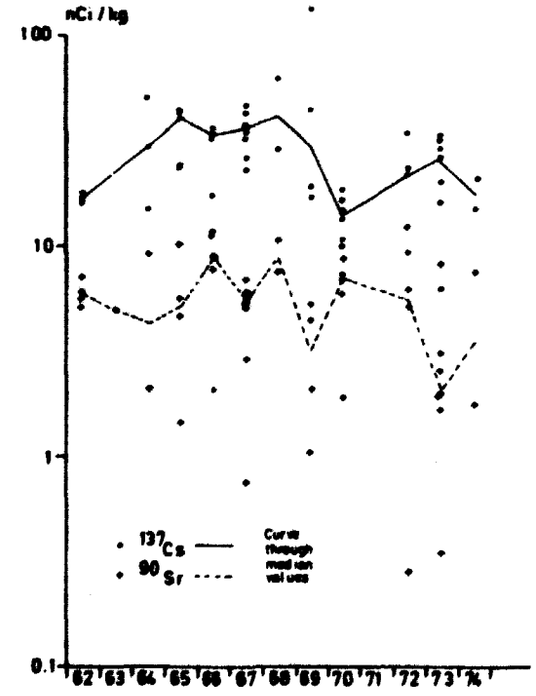

Fig. 2.5. Caesium-137 and Strontium-90 in lichen (fresh weight) collected along the Greenland coast 1962-74.

2.6. Strontium-90 in Drinking Water

Quarterly samples of drinking water were collected from a number of locations in Greenland. Table 2.6 shows the results from 1974, and fig. 2.6 the results from four of the locations for the period 1962-1974.

As in previous years, we found it most expedient to choose the geometric mean of all figures, i.e. 0.62 pCi ^{90}Sr/l, as representative of the mean level of ^{90}Sr in Greenland drinking water in 1974.

Table 2.6

Strontium-90 in drinking water collected in Greenland in 1974
(pCi ^{90}Sr/l)

Location	Jan.-Mar.	Apr.-June	July-Sep.	Oct.-Dec.
Danmarkshavn	1.6 ± 0.05			
Upernavik	0.51 B	0.94 A	0.73	0.06 B
Godhavn	0.35 A			
Prins Chr. Sund	2.42	0.57	0.78	

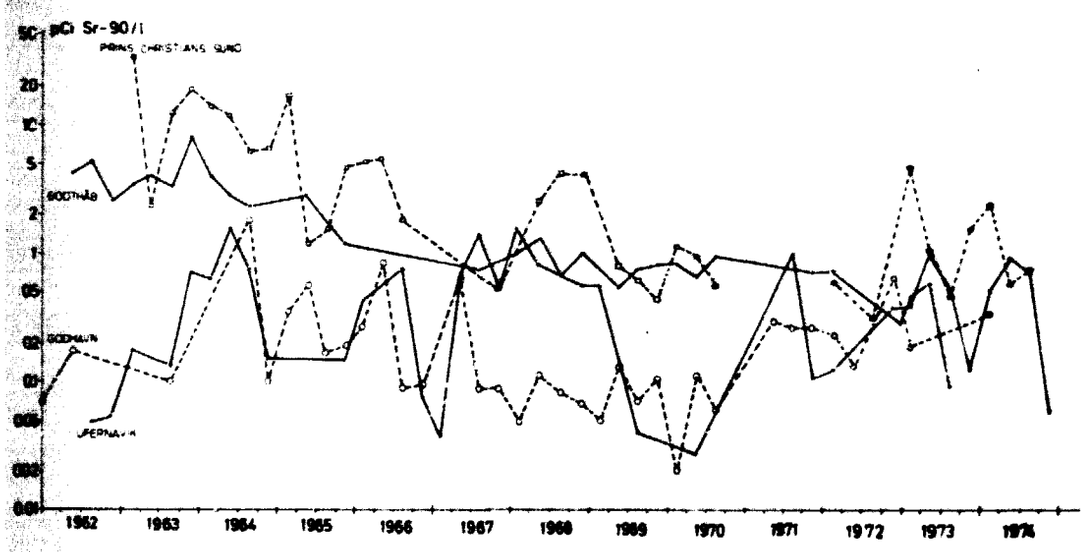

Fig. 2.6. Strontium-90 in Greenland drinking water, 1962-74.

Fig. 2.6 shows that the difference between the various locations has been less pronounced in recent years.

2.7. Caesium-137 in Greenlanders

In March 1974 three Greenlanders were measured for ^{137}Cs and ^{40}K in the wholebody counter at Risø[2]. These people were patients at the eye clinic at the Rigshospital in Copenhagen and had arrived from Greenland some days before the measurement. We may thus expect the ^{137}Cs levels to have been nearly the same as when they left Greenland.

As shown in table 2.7, the levels varied considerably. The woman from Upernavik told us that she very seldom consumed meat of terrestrial mammals. She generally ate the meat of seal, whale and fish, and rye bread.

Table 2.7

Wholebody measurements of Greenlanders in 1974

Month of measurement	No.	Age	Weight	Sex	Height	Residence in Greenland	pCi ^{137}Cs/kg	M.U.	g K/kg
Mar. 74	182	64 y	50 kg	F	148 cm	Frederikshåb	23.0	14.6	1.6
	183	52 -	50 -	F	156 -	Upernavik	4.8	2.4	2.0
	184	13 -	44 -	M	149 -	Frederikshåb	93.0	57.9	1.6

The two persons from Frederikshåb occasionally consumed meat of sheep and reindeer, and they both ate seal, fish, rye bread and vegetables. The boy drank 3/4 l milk per day.

From the estimated ^{137}Cs content in the Greenland diet (cf. table 3.2), we may estimate the mean content of ^{137}Cs in Greenlanders to be 3·16.4 pCi ^{137}Cs/g K ∿ 50 M.U. This estimate is not incompatible with the results of the wholebody measurements.

3. ESTIMATE OF THE MEAN CONTENTS OF ^{90}Sr AND ^{137}Cs IN THE HUMAN DIET IN GREENLAND IN 1974

3.1. The Annual Quantities

The estimate of the daily per capita intake of the different foods in Greenland is still based on the figures given in 1962 by Professor E. Hoff-Jørgensen, Ph.D., in Risø Report No. 65[1].

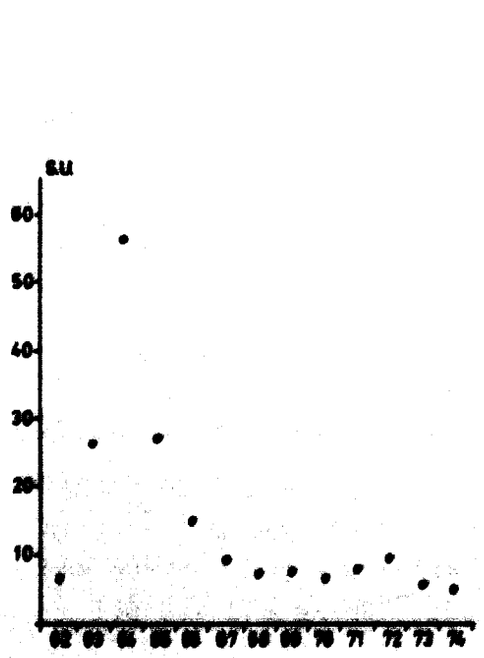

Fig. 3.1. Strontium-90 in Greenland diet, 1962-74.

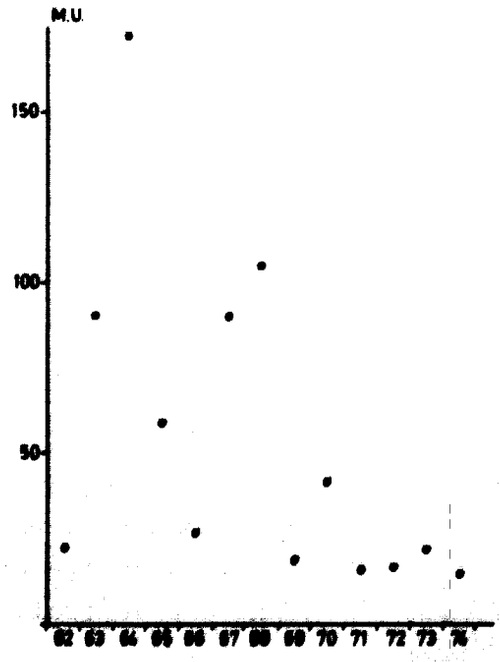

Fig. 3.2. Caesium-137 in Greenland diet, 1962-74.

3.2. Milk Products

All milk consumed in Greenland was imported as milk powder from Denmark. The mean radioactivity content in milk prepared from Danish dried milk produced in 1974 was 5.4 pCi ^{90}Sr/kg and 7.3 pCi ^{137}Cs/kg[2].

Cheese was also imported from Denmark and contained 38.3 pCi ^{90}Sr/kg and 5.3 pCi ^{137}Cs/kg.

3.3. Grain Products

All grain was imported from Denmark. It is assumed that only grain from the harvest of 1973 was consumed in Greenland during 1974. The daily per capita consumption was: rye flour (100% extraction): 80 g, wheat flour (75% extraction): 110 g, rye flour (70% extraction): 20 g, biscuits (rye, 100% extraction): 27 g, and grits: 25 g. The content of ^{90}Sr in these five products was 26, 4, 5, 19, and 14 pCi/kg respectively. Hence the mean content of ^{90}Sr in grain products was 13 pCi/kg. The content of ^{137}Cs in the five products was 12, 4, 6, 9, and 9 pCi/kg. Hence the mean content of ^{137}Cs in grain products was 8 pCi/kg.

The activity levels in rye flour (100% extraction), wheat flour (75% extraction), and grits were all taken from tables 5.9.1 and 5.9.2 in Risø Report No. 305[2]. The ^{90}Sr level in rye flour (70% extraction) was calculated analogously with the level in wheat flour (75% extraction), i.e. as one-fifth of the whole-grain activity. The ^{137}Cs content in rye flour (70% extraction) was calculated as one half of the whole-grain level in rye in analogy with the ratio between ^{137}Cs in whole wheat grain and in wheat flour (75% extraction)[2]. The ^{90}Sr and ^{137}Cs contents in biscuits were calculated by dividing the levels of the rye flour (100% extraction) by 1.35, since 1 kg flour yields 1.35 kg bread[2].

3.4. Potatoes, Other Vegetables, and Fruit

The Danish mean levels for 1974 were used[2] since the local production is insignificant compared with imports from Denmark.

The Danish mean levels were: in potatoes 3.2 pCi ^{90}Sr/kg and 6.3 pCi ^{137}Cs/kg, in other vegetables 9.8 pCi ^{90}Sr/kg and 1.9 pCi ^{137}Cs/kg, and in fruit 4.0 pCi ^{90}Sr/kg and 4.0 pCi ^{137}Cs/kg.

3.5. Meat

Nearly all meat consumed in Greenland is assumed to be of local origin. Approx. 10% comes from sheep, 5% from reindeer, 60% from seals, 5% from whales, and 20% from sea birds and eggs.

The activity in reindeer and lamb was estimated from 2.3. Activity in seals and whales was estimated from table 2.4.1, while sea birds and eggs were estimated to have contained the same as in 1969, i.e. 0.14 pCi ^{90}Sr/kg and 90 pCi ^{137}Cs/kg. Hence the mean levels in Greenland meat from 1974 were 2.4 pCi ^{90}Sr/kg and 222 pCi ^{137}Cs/kg.

3.6. Fish

All fish consumed was of local origin, and the mean levels from 2.4 were used, i.e. 0.6 pCi ^{90}Sr/kg and 60 pCi ^{137}Cs/kg.

3.7. Coffee and Tea

The Danish figures for 1974[2] were used for coffee and tea, i.e. 25 pCi ^{90}Sr/kg and 37 pCi ^{137}Cs/kg.

Table 3.1

Estimate of the mean content of ^{90}Sr in the human diet in Greenland in 1974

Type of food	Annual quantity in kg	pCi ^{90}Sr per kg	Total pCi ^{90}Sr	Percentage of total ^{90}Sr in food
Milk and cream	78	5.4	421	15.7
Cheese	2.5	38.3	96	3.6
Grain products	95.6	13	1243	46.4
Potatoes	32.8	3.2	105	3.9
Vegetables	5.5	9.8	54	2.0
Fruit	13.5	4.0	54	2.0
Meat and eggs	45.6	2.4	109	4.1
Fish	127.6	0.6	77	2.9
Coffee and tea	7.3	25	183	6.8
Drinking water	548	0.62	340	12.7
Total			2682	100

The mean annual calcium intake is estimated to be 560 g (approx. 200-250 g crete praeparata). Hence the ^{90}Sr/g Ca ratio in Greenland total diet in 1974 was 4.8 S.U. and the daily intake 7.3 pCi ^{90}Sr.

Table 3.2

Estimate of the mean content of ^{137}Cs in the human diet in Greenland in 1974

Type of food	Annual quantity in kg	pCi ^{137}Cs per kg	Total pCi ^{137}Cs	Percentage of total ^{137}Cs in food
Milk and cream	78	7.3	569	2.9
Cheese	2.5	5.3	13	0.1
Grain products	95.6	8	765	3.9
Potatoes	32.8	6.3	207	1.0
Vegetables	5.5	1.9	10	0.0
Fruit	13.5	4.0	54	0.3
Meat and eggs	45.6	222	10123	51.3
Fish	127.6	60	7656	38.8
Coffee and tea	7.3	37	270	1.4
Drinking water	548	0.1	55	0.3
Total			19722	100.0

The mean annual potassium intake is estimated to be approx. 1200 g. Hence the ^{137}Cs/g K ratio becomes 16.4 pCi ^{137}Cs/g K. The daily intake in 1974 from food was 54 pCi ^{137}Cs.

3.8. Drinking Water

The geometric mean calculated in 2.6 was used as the mean level of ^{90}Sr in drinking water, i.e. 0.52 pCi ^{90}Sr/l. The ^{137}Cs content was as previously[1] estimated at 1/4 of the ^{90}Sr content, i.e. approx. 0.1 pCi ^{137}Cs/l.

Tables 3.1 and 3.2 show the diet estimates of ^{90}Sr and ^{137}Cs respectively.

3.9. Discussion

The most important ^{90}Sr source in the Greenland diet is still grain products, which contribute 46.4% of the total ^{90}Sr content in the diet. Milk came next in importance, contributing 15.7%. Approx. 80% of the ^{90}Sr in the food consumed in Greenland in 1974 criginated from imported Danish food.

Meat is still the most important ^{137}Cs source in the Greenland diet, contributing 51.3% of the total content in 1974. Approx. 90% of the ^{137}Cs in the Greenland diet in 1974 came from local products.

As compared with the 1973 figures, the ^{90}Sr content in the total diet in 1974 was 87% of the 1973 level, while the ^{137}Cs level was approx. 76% of the 1973 level.

To estimate the maximum per capita intakes of ^{90}Sr and ^{137}Cs in Greenland in 1974 we again assume[1] that the only grain product consumed by a person is dark rye bread, that he only eats reindeer meat, and that his drinking water is rain water with a specific mean activity of 1.4 pCi ^{90}Sr/l and 2.1 pCi ^{137}Cs/l (cf. table 2.1.1). His daily intake of ^{90}Sr is thus 13 pCi (8.5 S.U.) and his ^{137}Cs intake 242 pCi/day (using the quantities in tables 3.1 and 3.2). At the lower limit we can imagine a person eating white bread and seal meat and drinking water with hardly any activity (e.g. water formed by the melting of old ice). In this case the daily intakes are 4 pCi ^{90}Sr (2.7 S.U.) and 25 pCi ^{137}Cs. Hence the ratios between the levels in the maximum and minimum diets become 3.2 for ^{90}Sr and 9.7 for ^{137}Cs.

The ^{90}Sr content of the Greenland diet was lower than the estimated Danish mean content[2], and 44% of the Faroese level[3]. The ^{137}Cs level in the total diet in Greenland was 3.5 times that of the Danish diet and 4.4 times lower than the Faroese diet level.

4. CONCLUSION

4.1.

The ^{90}Sr fall-out rates in 1974 were the following: Godhavn: approx. 0.8 mCi $^{90}Sr/km^2$; Godthåb: 0.5 mCi $^{90}Sr/km^2$; Prins Christians Sund: approx. 1.2 mCi $^{90}Sr/km^2$; Upernavik: 0.4 mCi $^{90}Sr/km^2$. The accumulated fall-out levels by the end of 1974 were estimated at approx. 27 mCi $^{90}Sr/km^2$ at Godhavn, 39 mCi $^{90}Sr/km^2$ at Godthåb, 140 mCi $^{90}Sr/km^2$ at Prins Christians Sund, and 16 mCi $^{90}Sr/km^2$ at Upernavik.

4.2.

The food consumed in Greenland in 1974 contained on the average 4.8 pCi ^{90}Sr/g Ca, and the daily mean intake of ^{137}Cs was estimated at 54 pCi. The most important ^{90}Sr contributors to the diet were grain products and milk products, together ac-

counting for approx. 65% of the total ^{90}Sr content of the diet. Caesium-137 originated mainly from meat (reindeer and lamb) and fish, contributing 90% of the total ^{137}Cs content of the diet.

4.3.

No ^{90}Sr analyses of human bone samples have hitherto been carried out on the population of Greenland. Considering the estimated ^{90}Sr levels in the diet, it seems probable[4], however, that the 1974 ^{90}Sr levels of humans in Greenland were on the average rather similar to those found in Denmark, i.e. the mean levels in human bone in Greenland were approx. 1-2 S.U. in newborn children, 1-2 S.U. in infants, 1-2 S.U. in children and teenagers, and 1-2 S.U. in adults (vertebrae).

From wholebody countings and diet measurements the ^{137}Cs content in Greenlanders was estimated at 25-50 pCi ^{137}Cs/g K.

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